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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,644	09/22/2003	Hyun-Rok Cha	084017.22224	1116

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EXAMINER

CAZAN, LIVIUS RADU

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 04/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/667,644

Applicant(s)

CHA, HYUN-ROK

Examiner

Livius R. Cazan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 5-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date 2/2/06, 6/3/05.
- 4) ☐ Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species A, claims 1-4 in the reply filed on 4/12/2006 is acknowledged.
2. Claims 5-18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 4/12/2006.

Priority

3. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in the Republic of Korea on 9/24/2002. It is noted, however, that applicant has not filed a certified copy of the 2002-57712 application as required by 35 U.S.C. 119(b).

Drawings

4. The drawings are objected to because Figs. 11-15 do not show the winding direction, as shown in Fig. 8 using arrows. This makes the figures difficult to understand. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

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and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

6. The abstract of the disclosure is objected to because it is longer than 150 words.

Correction is required. See MPEP § 608.01(b).

7. The disclosure is objected to because of the following informalities:

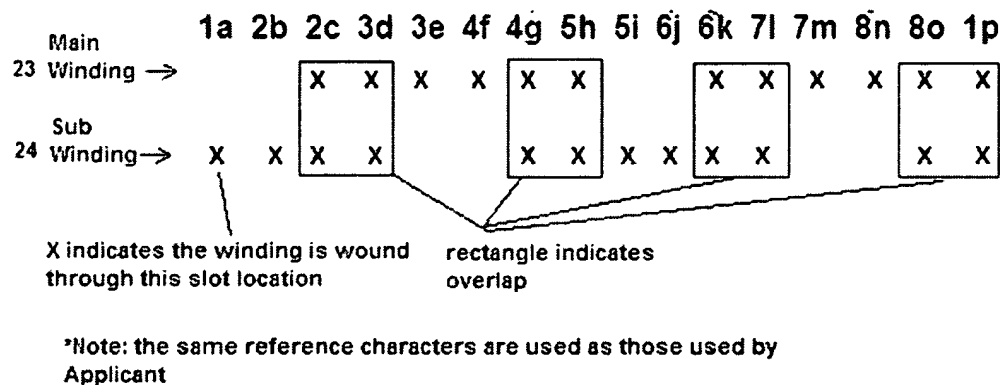
- On page 1, line 23, "angle 90°" should probably read --angle of 90°--

- On page 3, line 15, "size of compressor" should read --size of the compressor--
- On page 4, line 11, "has disadvantage" should read --has a disadvantage--
- On page 5, line 17, "of winding" should read --of turns--
- On page 5, line 17, "where the main winding is only wound" should read --where only the main winding is wound--; alternatively the entire paragraph could be revised
- On page 6, line 11, "1b" should read --2b--
- On page 11, line 24, "waveform" should read --a waveform-- or --waveforms--
- On page 12, line 10, "there occurs less the harmonic frequency" should be corrected in an appropriate manner
- On page 12, line 18, "5g" should read --5h--
- On page 12, line 22, "whole" should read --all--
- On page 13, lines 4, 5, 7, and 24, "of winding" should read --of turns--; likewise on lines 1 and 21-23 of page 14, lines 1, 17, and 19 of page 15, and lines 9 and 10 of page 17
- On page 13, line 19, "consecutively the slots" should read --consecutively into the slots--
- On page 13, line 18, "instead" should read --inserted--
- On page 13, line 21, "1b" should read --2b--

The Applicant is encouraged to carefully read the specification and correct any additional errors that may still be present in the specification. Furthermore, the specification (including the claims) should be amended so as to clarify the

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location of overlaps. For example, with respect to the embodiment of Fig. 11, the phrase "wherein at the four (4) slots" (as on page 12, line 16) is very unclear. One reading the specification would understand that windings 23 and 24 overlap in four of the slots. A more accurate interpretation would be that they overlap on four of the stator teeth (transitions from slot 2 to slot 3; 4 to 5, 6 to 7, and 8 to 1), as can be seen in the following figure. The other embodiments should be corrected as well.



Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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9. Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrases "being wound" (claim 1, line 3; claim 2, line 4), "is inserted" (claim 2, line 4), "is wound" (claim 2, lines 4 and 5) etc. should read --winding--, --inserting-- etc. so as to positively recite the method steps.

The claims include reference characters which are not enclosed within parentheses. Further it is unclear as to where the "neighboring slots" (claim 1), "neighboring three (3) slots" (claim 2) are located.

Regarding claims 3 and 4, reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m). Furthermore, such reference characters, i.e. 3d, 3e, 4f etc. are not given any weight because the reference characters have not defined any structural/operational/positional locations of the slots where the main winding and the sub winding are inserted/wound therethrough. For examination purposes, claim 3 is understood to mean "The method of claim 2, wherein the main winding is inserted into a slot and is then wound consecutively through other slots, while the sub winding is inserted into a slot and is then wound consecutively through other slots."

Regarding claim 4, it is unclear what is meant by winding the main winding "in a ratio of 0.75:1.0:0.75" since there is no recitation of any structural/operational relationship between the main winding and the slots.

The applicant should take note of the use of the phrase "slot" (such as in claims 2 and 3.) As used in the claims, the phrase is misleading, suggesting that 4f and 4g for example are two different slots, whereas in fact a single slot, i.e. slot 4 is being discussed.

Also, see the objections to the specification concerning the phrase "at four stator slots" (claim 2, line 15). For examination purposes, the interpretation that the windings should overlap on the stator teeth, instead of in slots will be used.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claim 1, as best understood, is rejected under 35 U.S.C. 102(b) as being anticipated by Kenji et al. (JP4127862).

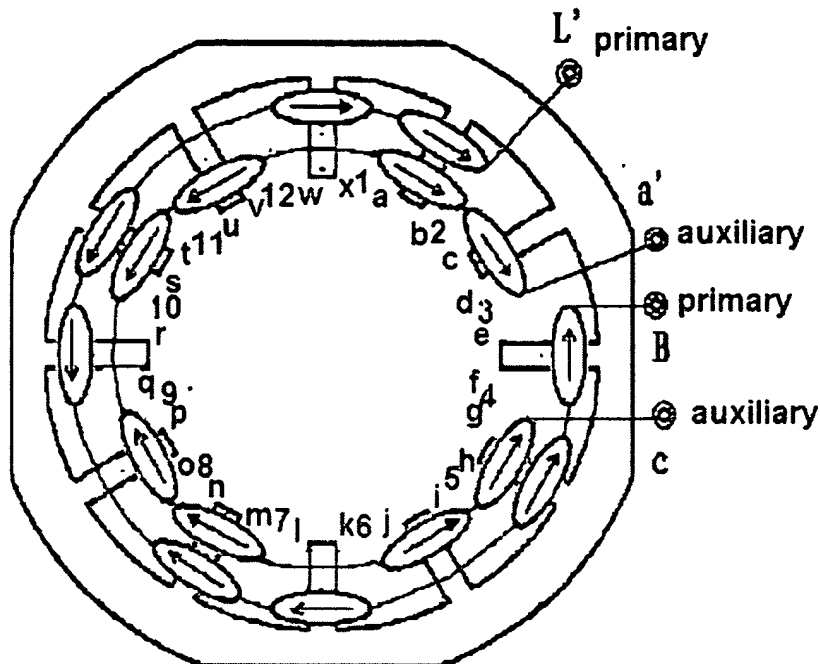
Kenji et al. disclose winding a main winding (6 in Fig. 1) and a sub winding (7 in Fig. 6) through a plurality of slots (slots between stator teeth 3 in Fig. 1) formed on a stator (stator core 1 in Fig. 1), the main winding and the sub winding being wound in a concentrated winding type (see abstract; see Fig. 1; the windings are clearly of the

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concentrated type) with a regularity so that the main winding and the sub winding each pass through neighboring slots of the stator, wherein at least two slots, the main winding and the sub winding are overlapped (see Fig. 1; the windings overlap on several teeth, on every tooth which has both a coil 6 and a coil 7).

12. Claims 1-4, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Kenji et al. (JP411041882).

Regarding claims 1 and 2, Kenji et al. disclose winding a main winding (windings 7b, 7c, 7d, 7e, 7f, 7i, 7k, and 7l, and 7j in Fig. 2) and a sub winding (8a, 8c, 8d, 8f, 8g, 8i, 8j, 8l) through slots formed on a stator of a single phase induction motor, the main winding and the sub winding being wound with a regularity so that each is inserted into a predetermined slot and then is wound consecutively (i.e. without skipping any slots) through neighboring three (3) slots with reference to the initially entered slot, wherein at four stator slots, the main winding and the sub winding are overlapped. See the image below (based on Fig. 6).



The primary winding starts at slot 3 (3e) and is wound through the next three consecutive slots, i.e. 4f and 4g in slot 4, 5h in slot 5, and 6k in slot 6. The auxiliary winding starts at slot 4 (4g) and is wound through the next three consecutive slots, i.e. 5h and 5i in slot 5, 6j in slot 6, and 7m in slot 7. The two windings overlap on four of the stator teeth, i.e. the between 1a and 2b, the tooth between 4g and 5h, the tooth between 7m and 8n, and the tooth between 10s and 11t.

Regarding claims 3 and 4, Kenji et al. disclose inserting the main winding into a first slot 3 (3e) and is wound consecutively through seven other slots, i.e. slots 4 (f and 4g), 5 (5h), 6 (6k), 7 (7l and 7m), 8 (8n), 9 (9q), 10 (10r and 10s). The sub winding is inserted into a first slot 4 (4g), and is wound consecutively through seven other slots, i.e. slots 5 (5h and 5i), 6 (6j), 7 (7m), 8 (8n and 8o), 9 (9p), 10 (10s), and 11 (11t and 11u).

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Note: As currently claimed, there is no indication that the windings are not further wound through slots other than those mentioned. In claim 2, the applicant claims that the windings are wound through three consecutive slots relative to the slot in which they were inserted, whereas in claim 3, the windings are wound through seven slots. This is an indication that the windings could be further wound in more slots.

Claim Rejections - 35 USC § 103

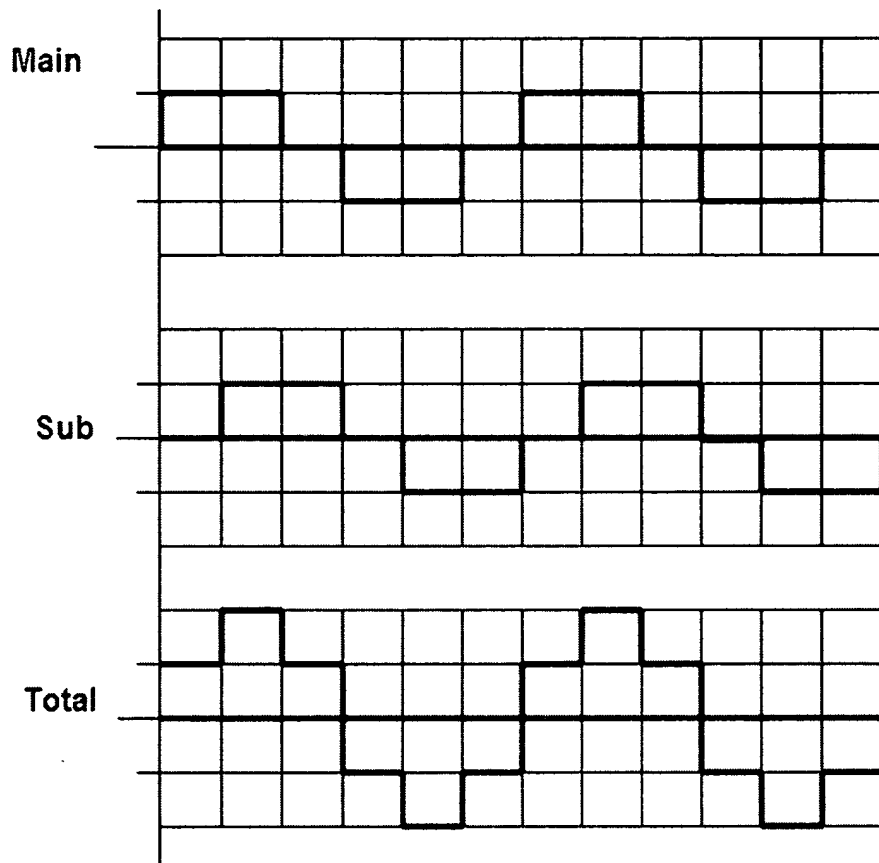
13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. To the extent the applicant disagrees, claims 2-4, as best understood, are alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Kenji et al. (JP411041882).

Kenji et al. disclose the same invention as the applicant, except for the particular slots in which the coils are inserted.

However, Kenji et al. disclose a winding arrangement which inherently results in a sinusoidal mmf waveform (see the image below).



“Main” illustrates a waveform produced by the main winding, “Sub” a waveform produced by the sub winding, and “Total” shows the net mmf waveform. As can be seen, the resultant waveform is sinusoidal, as in applicant’s invention.

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to wind a stator core as in the invention claimed by the applicant because Applicant has not disclosed that winding the stator in the *particular* arrangement claimed in claim 3 provides an advantage, is useful for a particular purpose, or solves a stated problem that could not be solved by using a different winding pattern. Passing a winding through N slots before skipping a stator tooth, as opposed to say N+1 or N-1 affects the shape of the waveform, but maintains

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the overall sinusoidal shape. Applicant discloses wanting a sinusoidal waveform (page 12, Ins 5-10) in order to reduce harmonic frequencies. However, no reason is given as to why inserting the windings in the particular slots provides an advantage over other winding arrangements which produce a sinusoidal mmf waveform.

Therefore it would have been prima facie obvious to wind a stator to obtain the invention as specified in claim 3, in view of the teachings of Kenji et al. because such a modification would have been considered a mere design consideration which fails to patentably distinguish over the prior art of Kenji et al.

Conclusion

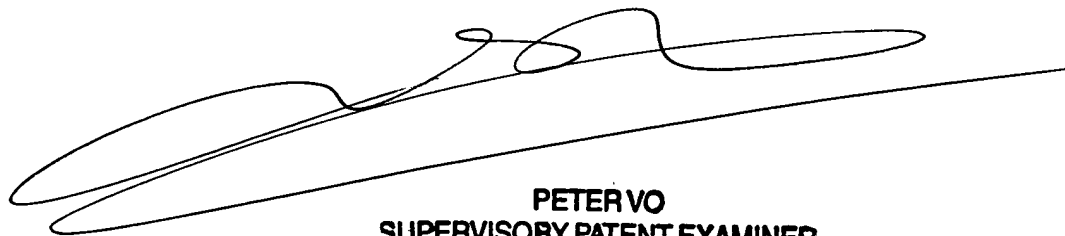
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Livius R. Cazan whose telephone number is (571) 272-8032. The examiner can normally be reached on 7:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on (571)272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LRC 04/20/2006

A handwritten signature in black ink, appearing to read "PETER VO", is written over a horizontal line. The signature is stylized with loops and a long horizontal stroke.

PETER VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700